

WHAT IS CLAIMED IS:

1. A method of installing an energy recovery apparatus in an air-conditioning system comprising a water tank, a feed pipe line for feeding water from the water tank to air-conditioning loads such as a heat source or a fan coil via a pump, a return pipe line for leading water which has passed through the air-conditioning loads into the water tank, and a pressure sustaining valve disposed in the return pipe line, the method comprising the steps of:

connecting, to the return pipe line, a branch pipe line branching into the water tank from the return pipe line upstream of the pressure sustaining valve; and connecting an energy recovery apparatus in the branch pipe line.

2. An air-conditioning system comprising: a water tank; a feed pipe line for feeding water from the water tank to air-conditioning loads such as a heat source or a fan coil via a pump; a return pipe line for leading the water which has passed through the air-conditioning loads into the water tank; and a pressure sustaining valve disposed in the return pipe line, the system further comprising:

a branch pipe line connected to the return pipe line upstream of the pressure sustaining valve and branching into the water tank; and an energy recovery apparatus connected in the branch pipe line.

3. An air-conditioning system according to claim

2, wherein the energy recovery apparatus comprises: an operation control device for controlling operation of the energy recovery apparatus in such a manner that an inlet pressure falls within a predetermined rate range with respect to an inlet pressure during operation at a rated discharge, when a discharge passing through the energy-recovery apparatus changes.

4. An air-conditioning system according to claim 2 or 3, wherein a bore diameter of a pipe line downstream of the energy recovery apparatus is smaller than that upstream thereof.

5. An air-conditioning system according to any one of claims 2 to 4, wherein the energy recovery apparatus comprises: a water wheel including a centrifugal impeller; a brushless permanent magnet synchronous generator; and a generator controller for controlling the generator.

6. An air-conditioning system according to claim 5, wherein a control valve is disposed in the return piping on the downstream side of the energy recovery apparatus.

7. An air-conditioning system according to claim 6, wherein the water wheel comprises pressure sensors for measuring inlet and outlet pressures upstream and downstream thereof so as to transmit output signals to the generator controller, the generator controller being capable of controlling a revolving speed of the generator incorporated to the water wheel based on the

output signals, and delivering a control signal to the generator, and a power measuring device for measuring an output power of the generator to deliver a measurement result to a control valve controller, the control valve controller being capable of specifying a valve opening degree of the control valve based on the measurement result so as to deliver a valve opening signal to the control valve.

8.           The air-conditioning system according to claim 7, wherein the revolving speed of the generator incorporated to the water wheel is increased in response to a decrease in the discharge, and the increasing of the revolving speed of the generator incorporated to the water wheel is caused so as to reduce the valve opening degree of the control valve by the control valve controller in association with the generator controller, when an output power of a water wheel or an effective head drop thereof is smaller than a set value recorded in the generator controller.